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EXAMINER

ELLIOTT IV, BENJAMIN H

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/596,641	Applicant(s) DENECHAU ET AL.	
	Examiner BENJAMIN ELLIOTT	Art Unit 2416	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 May 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 23-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 27-29, 32-40 is/are rejected.
- 7) ☒ Claim(s) 30 and 31 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is in response to communications filed on 5/20/2009. Claims 23-40 have been examined and are pending. Claims 23-40 stand rejected.

Claim Rejections - 35 USC § 112

2. In light of newly amended claims and Applicant's arguments, rejections of claims 23, 30, 31, and 38-40 under 35 U.S.C. 112, second paragraph have been withdrawn.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

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the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 23-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over European Patent Publication EP 0561381 A2 to Port et al. (hereinafter "Port") in view of US Patent 4,538,147 to Grow (hereinafter "Grow"), further in view of United States Patent 4,713,807 to Caves et al (hereinafter "Caves"), and further in view of United States Patent Application Publication 2003/0154285 A1 to Berglund et al (hereinafter "Berglund")..

As per Claim 23, Port discloses a method to use in a node within a network comprising a transport layer protocol providing end to end data transfer (Port: Col. 24, lines 36-39. The invention may be embedded into a custom transport protocol layer such as TCP/IP.), **for multicasting datagrams on a virtual ring** (Port: Col. 6, lines 23-28. In the multicasting system of the invention, messages are transmitted to a group belonging to the ring network.), **each node on the virtual ring being logically connected according to the network transport layer protocol to an upstream neighbor node and a downstream neighbor node through virtual connections** (Port: Figure 1; Col. 7, lines 38-50. Host processors 111-118 are connected to nodes

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101-108, respectively, forming a ring that sends data in a unidirectional communications path.) **comprising:**

sending a datagram to the downstream neighbor node on the virtual ring (Port:

Col. 25, lines 3-9. Each node sends messages to a downstream node and receives from an upstream node. These nodes are interconnected to form a ring.);

identifying the received datagram upon receipt of the datagram (Port: Col. 14, lines

15-26. Normal packets are sent from a first process to a second process. A node receiving a packet determines if it is the source of the packet.);

forwarding the token to the downstream neighbor node on the identified virtual

ring if the token is valid (Port: Col. 26, lines 6-11. One type of message that is sent

through the nodes is an INIT TOKEN message that initializes, or sets, the ring network.

Col. 26, lines 24-26. Based on the originator of the message, the INIT TOKEN message is transmitted to the next node downstream until it returns to the originator of the message.);

forwarding said virtual ring datagram to the downstream neighbor node on the

identified virtual ring if the received virtual ring datagram has not been locally

originated (Port: Figure 6b; Col. 19, lines 7-11. If the receiving node determines the packet originated from a different node, the packet is passed on through the network.);

and removing the virtual ring datagram from the virtual ring if the received virtual

ring datagram has been locally originated (Port: Figure 6b; Col. 19, lines 7-9, lines

11-16. The OWNERSHIP bit in the packet is checked, and if it is not set, the bit, 0, is reset and the packet is deleted.).

Port is silent on **each node including an IP address of a virtual ring manager, determining if the received datagram is a token generated by the virtual ring manager, wherein said manager is responsible for validating and modifying a ring topology and determining if the received datagram is a virtual ring datagram containing data other than a token.**

Grow discloses bandwidth allocation in a token controlled loop communications network, from Figure 5 and Col.14, lines 35-38, wherein the ring logic is incorporated in each unit of the ring network of Figure 1, that the frame synchronization logic determines whether the frame is a data frame or a token frame. If the received frame is a data frame, the frame is either deleted or continued through the ring architecture, depending on the source of the data frame having received or having not received the data frame (Grow; Col. 16, lines 17-29). Further, Grow discloses the received datagram has information other than a token in Figure 3. The data frame format (consistent with a datagram) contains a field for information and a destination and source address, whereas the write token does not. Grow discloses the start frame delimiter determines whether the frame is a token or a data frame (Grow: Col. 13, lines 26-31).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Port to combine the first embodiment describing the handling of normal packets and the alternate embodiment for handling token packets and to include **determining if the received datagram is a token and determining if the received datagram is a virtual ring datagram containing data other than a token** taught by Grow to properly determine when information may be

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transmitted through the loop. By sending a token through the loop, the load through the loop can be measured which ultimately determines the class of service that can be established (Grow; Col. 6, lines 11-17).

The combination of Port and Grow is silent on whether the received datagram is **a token generated by the virtual ring manager, the manager responsible for the topology of the ring, and each node containing the IP address of the manager.**

Caves discloses a topology of stations meant to send and receive packets configured in a ring. One of the stations is described as the Master Station (Caves: Figure 1). Caves further discloses the Master Station is **capable of generating a token** (Caves: Col. 4 lines 49-53). Caves also discloses **the manager is responsible for the topology of the ring** by generating the frame format (Caves: Col. 1, lines 54-58), building the transmission delay through the ring (Caves: Col. 1, lines 66-68), informing the other stations in the ring regarding available bandwidth (Caves: Col. 4, lines 5-8), determining the priority of the slots (Caves: Col. 5, lines 61-66), and is able to determine the topology of the ring by checking circuit slots for ownership (Caves: Col. 6, lines 62-65).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Port and Grow to include a ring manager capable of generating tokens in the ring topology, monitoring the topology and validating the topology as taught by Caves. This benefits the method by synchronizing the topology of the network when a master station is present (Caves: Col. 7, lines 59-61).

The combination of Port, Grow, and Caves is silent on **each node containing the IP address of the manager.**

Berglund discloses an Ethernet Computer Enclosure Service (CES) wherein the CES devices are coordinated in a ring topology, and one of the CES devices acts as the master of the ring (Berglund: Abstract). Berglund discloses the master node is capable of sending signals from one of its ports to ports of slave nodes in circular fashion to discover the topology and breaks in the ring (Berglund: [0037]). Berglund further discloses the manager assigns IP addresses to all slave nodes and itself (Berglund: [0020]), wherein the IP addresses are known to all nodes in the ring and **each node containing the IP address of the manager** (Berglund: [0057], Table III).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Port, Grow, and Caves to include IP addresses to be known to each node in the topology as taught by Berglund. This benefits the method by maintaining a history of all IP addresses if the system fails and the capability to restore the addresses (Berglund: [0052]).

As per Claim 24, Port in view of Grow in view of Caves and further in view of Berglund discloses **the method of claim 23, wherein the step of determining if the received datagram is a token includes identifying the virtual ring and checking that the token has been sent by the upstream neighbor node on the identified virtual ring** (Port: Col. 26, lines 24-2. If the node that received the INIT TOKEN message was not the originator, it sends it to the next node downstream.);

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and the step of determining if the received datagram is a virtual ring datagram includes identifying the virtual ring when the datagram is received and checking that the datagram has been sent by the upstream neighbor node on the identified virtual ring (Port: Col. 25, lines 3-9. Each node sends messages to a downstream node and receives from an upstream node. These nodes are interconnected to form a ring.).

Port is silent on **determining if the received datagram is a token and determining if the received datagram is a virtual ring datagram.**

However, Grow, in the disclosed invention on bandwidth allocation in a token controlled loop communications network teaches, from Figure 5 and Col.14, lines 35-38 wherein the ring logic is incorporated in each unit of the ring network of Figure 1, that the frame synchronization logic determines whether the frame is a data frame or a token frame. And, like the Port document, if the received frame is a data frame, the frame is either deleted or continued through the ring architecture, depending on the source of the data frame having received or having not received the data frame (Grow: Col. 16, lines 17-29).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Port to combine the first embodiment describing the handling of normal packets and the alternate embodiment for handling token packets and to include **determining if the received datagram is a token and determining if the received datagram is a virtual ring datagram** taught by Grow to properly determine when information may be transmitted through the loop. By sending a

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token through the loop, the load through the loop can be measured which ultimately determines the class of service that can be established (Grow: Col. 6, lines 11-17).

As per Claim 25, Port in view of Grow in view of Caves and further in view of Berglund discloses **the method according to claim 23, wherein a node on the virtual ring is defined as being a virtual ring manager node** (Caves: Figure 1); **the token comprises a sequence number incremented each time the token is received by the virtual ring manager node** (Caves: Col. 1, lines 16-20); **and the step of checking whether the token is valid comprises checking whether the token sequence number has been incremented since a last reception** (Caves: Col. 1, lines 25-33).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Port and Grow to include a ring manager capable of generating tokens in the ring topology, monitoring the topology and validating the topology as taught by Caves. This benefits the method by synchronizing the topology of the network when a master station is present (Caves: Col. 7, lines 59-61).

As per Claim 26, Port in view of Grow in view of Caves and further in view of Berglund discloses **the method of claim 25, wherein the step of checking whether the token is valid comprises executing a recovery procedure if it is determined said token is not valid** (Caves: Col. 9, lines 11-31).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Port and Grow to include a ring manager capable of generating tokens in the ring topology, monitoring the topology and validating

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the topology as taught by Caves. This benefits the method by synchronizing the topology of the network when a master station is present (Caves: Col. 7, lines 59-61).

As per Claim 27, Port in view of Grow in view of Caves and further in view of Berglund discloses **the method of claim 23, wherein the step of forwarding the token to the downstream neighbor node on the identified virtual ring comprises: starting a timer and waiting for a return of the token** (Port: Col. 26, lines 30-34. The originating node allows for an allotted time for the token to return.); **and executing a recovery procedure when the timer expires, wherein receipt of a token comprises stopping the timer** (Port: Col. 26, lines 34-36. The originating node retransmits the token if not received in the allotted time. Col. 26, lines 37-42. The originating node considers initialization of the network to be complete once the token returns to it.).

As per Claim 28, Port in view of Grow in view of Caves and further in view of Berglund discloses **the method of claim 23, wherein a node is selected from a group consisting of: a computer system routing datagrams in the network, and a computer system exchanging datagrams on the network** (Port: Col. 8, lines 22-26. A packet is placed on a ring where it follows one of several paths until it reaches the destination node. Col. 26, lines 8-14. An INIT TOKEN message is exchanged between nodes to set-up the ring network.).

As per Claim 29, Port in view of Grow in view of Caves and further in view of Berglund discloses **the method of claim 23, further comprising a virtual ring**

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manager

node on the virtual ring to execute preliminary steps comprising:

generating a token (Caves: Col. 4 lines 49-53);

setting a token sequence number of said token to an initial value (Caves: Col. 1, lines 16-20);

forwarding said token to the downstream neighbor node on the virtual ring

(Caves: Col. 4, lines 49-53), **comprising:**

incrementing the token sequence number (Caves: Col. 10, lines 28-31);

and executing a recovery procedure when a timer expires (Caves: Col. 9, lines 1-10. Timeout) **comprising:**

generating a new token (Caves: Col. 9, lines 16-20. Each station generates their own frames.);

and forwarding said token to the downstream neighbor node on the virtual ring

(Caves: Col. 9, lines 32-40).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Port and Grow to include a ring manager capable of generating tokens in the ring topology, monitoring the topology and validating the topology as taught by Caves. This benefits the method by synchronizing the topology of the network when a master station is present (Caves: Col. 7, lines 59-61).

7. Claims 32-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Port in view of Grow in view of Caves in view of Berglund, and further in view of United

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States Patent Application Publication 2002/0112065 A1 to Denecheau et al (hereinafter "Denecheau").

As per Claim 32, Port in view of Grow in view of Caves and further in view of Berglund discloses **the method of claim 25, further comprising:**
maintaining and updating:
means for identifying the virtual ring (Port: Abstract);
an address of the upstream neighbor node (Berglund: Table III);
an address of the downstream neighbor node (Berglund: Table III);
and an address of the virtual ring manager (Berglund: Table III).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Port, Grow, and Caves to include IP addresses to be known to each node in the topology as taught by Berglund. This benefits the method by maintaining a history of all IP addresses if the system fails and the capability to restore the addresses (Berglund: [0052]).

The combination is silent on information relating to a back-up manager.

Denecheau discloses **optionally maintaining and updating an address of a backup virtual ring manager** (Denecheau: [0044] and [0050]).

It would have been obvious to one of ordinary skill in the art at the time the invention was to modify the method of Port, Grow, Caves, and Berglund to include a back-up manager as taught by Denecheau. This benefits the method by updating the ring topology and not allowing the ring to be broken (Denecheau: [0050]).

As per Claim 33, Port in view of Grow in view of Caves and further in view of Berglund discloses **the method of claim 23**, but is silent on joining the virtual ring.

Denecheau discloses **a preliminary step of joining the virtual ring** (Denecheau: [0038]), **comprising:**

sending to a virtual ring node manager node previously defined on the virtual ring, an insertion request message comprising an address of the node (Denecheau: [0038]);

and means for identifying the virtual ring (Denecheau: [0038]. All stations are aware of the joining node.);

and receiving an insertion confirmation message from the virtual ring manager node comprising an address of an upstream neighbor node (Denecheau: [0040]. “Granted”, previous address);

and an address of a downstream neighbor node (Denecheau: [0040]. “next station” address).

It would have been obvious to one of ordinary skill in the art at the time the invention was to modify the method of Port, Grow, Caves, and Berglund to include joining a ring topology as taught by Denecheau. This benefits the method by updating the ring topology and not allowing the ring to be broken (Denecheau: [0050]).

As per Claim 34, Port in view of Grow in view of Caves in view of Berglund and further in view of Denecheau discloses **the method of claim 33, wherein the step of sending an insertion request message comprises:**

starting an insertion timer (Denecheau: [0038]);

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wherein the step of receiving an insertion confirmation message comprises
stopping the insertion timer (Denecheau: [0038]);
and wherein, if the insertion timer expires, said method comprises:
sending an insertion request message comprising:
the address of the node (Denecheau: [0038]);
and means for identifying the virtual ring to a backup ring manager node
previously defined on the virtual ring (Denecheau: [0044]);
restarting the insertion timer (Denecheau: [0046]);
receiving an insertion confirmation message from the backup virtual ring
manager comprising:
the address of an upstream neighbor node (Denecheau: [0050]. "...informs
previous...station.);
the address of a downstream neighbor node (Denecheau: [0050]. "...informs
next...station.);
and stopping the insertion timer (Denecheau: [0051]).

It would have been obvious to one of ordinary skill in the art at the time the invention was to modify the method of Port, Grow, Caves, and Berglund to include joining a ring topology as taught by Denecheau. This benefits the method by updating the ring topology and not allowing the ring to be broken (Denecheau: [0050]).

As per Claim 35, Port in view of Grow in view of Caves and further in view of Berglund discloses **the method of claim 23**, but is silent on nodes leaving the topology.

Denecheau discloses **sending to a virtual ring manager node previously defined on the virtual ring, a removal request message comprising** (Denecheau: [0042]):

an address of the upstream neighbor node (Denecheau: [0042]);

an address of the downstream neighbor node (Denecheau: [0042]);

and an address of the node (Denecheau: [0042]);

and receiving a removal confirmation message from the virtual ring manager (Denecheau: [0050]).

It would have been obvious to one of ordinary skill in the art at the time the invention was to modify the method of Port, Grow, Caves, and Berglund to include leaving a ring topology as taught by Denecheau. This benefits the method by updating the ring topology and not allowing the ring to be broken (Denecheau: [0050]).

As per Claim 36, Port in view of Grow in view of Caves in view of Berglund and further in view of Denecheau discloses **the method of claim 35, wherein the step of sending a removal request message comprises starting a removal timer** (Denecheau: [0046]);

wherein the step of receiving a removal confirmation message comprises stopping the removal timer (Denecheau: [0046]);

and wherein, if the insertion timer expires, said method comprises:

sending to a backup ring manager node previously defined on the virtual ring, a removal request message (Denecheau: [0042]), **comprising:**

the address of the upstream neighbor node (Denecheau: [0042]);

the address of the downstream neighbor node (Denecheau: [0042]);
and the address of the node (Denecheau: [0042]);
restarting the removal timer (Denecheau: [0046]);
receiving a removal confirmation message from the backup virtual ring manager
(Denecheau: [0050]);
and stopping the removal timer (Denecheau: [0051]).

It would have been obvious to one of ordinary skill in the art at the time the invention was to modify the method of Port, Grow, Caves, and Berglund to include leaving a ring topology as taught by Denecheau. This benefits the method by updating the ring topology and not allowing the ring to be broken (Denecheau: [0050]).

As per Claim 37, Port in view of Grow in view of Caves and further in view of Berglund discloses **the method according to claim 23**, but is silent on steps involving changing neighbors.

Denecheau discloses **receiving from a virtual ring manager node defined on the virtual ring, a change neighbor message comprising an address selected from a group consisting of:**

an address of a new upstream neighbor node, an address of a new downstream neighbor node, and combinations thereof (Denecheau: [0049]. This message is the same as the insert message.);

maintaining an address selected from a group consisting of:

the address of the new upstream neighbor node, the address of the new downstream neighbor node, and combinations thereof (Denecheau: [0049]);

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and sending to the virtual ring manager node a neighbor change confirmation message (Denecheau: [0040]. “Ring Insertion Acknowledgement”).

8. Claims 38-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Port in view of Grow, and further in view of Caves.

As per Claim 38, Port discloses **a computer network comprising:**
at least two nodes having a transport layer protocol to provide end to end data transfer to multicast datagrams in a virtual ring (Port: Col. 24, lines 36-39. The invention may be embedded into a custom transport protocol layer such as TCP/IP. Col. 6, lines 23-28. In the multicasting system of the invention, messages are transmitted to a group belonging to the ring network.);
each node on said virtual ring being logically connected to an upstream neighbor node and a downstream neighbor node through virtual connection (Port: Figure 1; Col. 7, lines 38-50. Host processors 111-118 are connected to nodes 101-108, respectively, forming a ring that sends data in a unidirectional communications path.);
and instructions for multicasting datagrams on said virtual ring comprising:
sending a datagram to the downstream neighbor node on the virtual ring (Port: Col. 25, lines 3-9. Each node sends messages to a downstream node and receives from an upstream node. These nodes are interconnected to form a ring.);
identifying the received datagram upon receipt of the datagram (Port: Col. 14, lines 15-26. Normal packets are sent from a first process to a second process. A node

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receiving a packet determines if it is the source of the packet.);

forwarding said virtual ring datagram to the downstream neighbor node on the identified virtual ring if the received virtual ring datagram has not been locally

originated (Port: Figure 6b; Col. 19, lines 7-11. If the receiving node determines the packet originated from a different node, the packet is passed on through the network.);

and removing the virtual ring datagram from the virtual ring if the received virtual ring datagram has been locally originated (Port: Figure 6b; Col. 19, lines 7-9, lines 11-16. The OWNERSHIP bit in the packet is checked, and if it is not set, the bit, 0, is reset and the packet is deleted.).

Port is silent on **determining if the received datagram is a token generated by the virtual ring manager, wherein said manager is responsible for validating and modifying a ring topology and determining if the received datagram is a virtual ring datagram containing data other than a token.**

Grow discloses bandwidth allocation in a token controlled loop communications network, from Figure 5 and Col.14, lines 35-38, wherein the ring logic is incorporated in each unit of the ring network of Figure 1, that the frame synchronization logic determines whether the frame is a data frame or a token frame. If the received frame is a data frame, the frame is either deleted or continued through the ring architecture, depending on the source of the data frame having received or having not received the data frame (Grow; Col. 16, lines 17-29). Further, Grow discloses the received datagram has information other than a token in Figure 3. The data frame format (consistent with a datagram) contains a field for information and a destination and source address,

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whereas the write token does not. Grow discloses the start frame delimiter determines whether the frame is a token or a data frame (Grow: Col. 13, lines 26-31).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Port to combine the first embodiment describing the handling of normal packets and the alternate embodiment for handling token packets and to include **determining if the received datagram is a token** and **determining if the received datagram is a virtual ring datagram containing data other than a token** taught by Grow to properly determine when information may be transmitted through the loop. By sending a token through the loop, the load through the loop can be measured which ultimately determines the class of service that can be established (Grow; Col. 6, lines 11-17).

The combination of Port and Grow is silent on whether the received datagram is a **token generated by the virtual ring manager** and that **the manager is responsible for the topology of the ring**.

Caves discloses a topology of stations meant to send and receive packets configured in a ring. One of the stations is described as the Master Station (Caves: Figure 1). Caves further discloses the Master Station is **capable of generating a token** (Caves: Col. 4 lines 49-53). Caves also discloses **the manager is responsible for the topology of the ring** by generating the frame format (Caves: Col. 1, lines 54-58), building the transmission delay through the ring (Caves: Col. 1, lines 66-68), informing the other stations in the ring regarding available bandwidth (Caves: Col. 4, lines 5-8), determining the priority of the slots (Caves: Col. 5, lines 61-66), and is able to determine

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the topology of the ring by checking circuit slots for ownership (Caves: Col. 6, lines 62-65).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Port and Grow to include a ring manager capable of generating tokens in the ring topology, monitoring the topology and validating the topology as taught by Caves. This benefits the method by synchronizing the topology of the network when a master station is present (Caves: Col. 7, lines 59-61).

As per Claim 39, Port discloses an article comprising:

a computer network comprising at least two nodes having a transport layer

protocol to provide end to end data transfer to multicast datagrams in a virtual

ring (Port: Col. 24, lines 36-39. The invention may be embedded into a custom

transport protocol layer such as TCP/IP. Col. 6, lines 23-28. In the multicasting system of the invention, messages are transmitted to a group belonging to the ring network.);

each node on said virtual ring being logically connected to an upstream neighbor

node and a downstream neighbor node through virtual connection (Port: Figure 1;

Col. 7, lines 38-50. Host processors 111-118 are connected to nodes 101-108,

respectively, forming a ring that sends data in a unidirectional communications path.);

a computer readable medium in said network (Port: Col. 24, lines 36-39. The invention may be embedded into an application program.);

instructions in said medium for multicasting datagrams on said virtual ring
comprising:

instructions for sending a virtual ring datagram to the downstream neighbor node

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on the virtual ring (Port: Col. 25, lines 3-9. Each node sends messages to a downstream node and receives from an upstream node. These nodes are interconnected to form a ring.);

instructions for identifying the received datagram upon receipt of the datagram (Port: Col. 6, lines 23-28. In the multicasting system of the invention, messages are transmitted to a group belonging to the ring network.);

instructions for forwarding said virtual ring datagram to the downstream neighbor node on the identified virtual ring if the received virtual ring diagram has not been local originated (Port: Figure 6b; Col. 19, lines 7-11. If the receiving node determines the packet originated from a different node, the packet is passed on through the network.);

and instructions for removing the virtual ring datagram from the virtual ring if the received virtual ring datagram has been locally originated (Port: Figure 6b; Col. 19, lines 7-9, lines 11-16. The OWNERSHIP bit in the packet is checked, and if it is not set, the bit, 0, is reset and the packet is deleted.).

Port is silent on **determining if the received datagram is a token generated by the virtual ring manager, wherein said manager is responsible for validating and modifying a ring topology and determining if the received datagram is a virtual ring datagram containing data other than a token.**

Grow discloses bandwidth allocation in a token controlled loop communications network, from Figure 5 and Col.14, lines 35-38, wherein the ring logic is incorporated in each unit of the ring network of Figure 1, that the frame synchronization logic

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determines whether the frame is a data frame or a token frame. If the received frame is a data frame, the frame is either deleted or continued through the ring architecture, depending on the source of the data frame having received or having not received the data frame (Grow; Col. 16, lines 17-29). Further, Grow discloses the received datagram has information other than a token in Figure 3. The data frame format (consistent with a datagram) contains a field for information and a destination and source address, whereas the write token does not. Grow discloses the start frame delimiter determines whether the frame is a token or a data frame (Grow: Col. 13, lines 26-31).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Port to combine the first embodiment describing the handling of normal packets and the alternate embodiment for handling token packets and to include **determining if the received datagram is a token** and **determining if the received datagram is a virtual ring datagram containing data other than a token** taught by Grow to properly determine when information may be transmitted through the loop. By sending a token through the loop, the load through the loop can be measured which ultimately determines the class of service that can be established (Grow; Col. 6, lines 11-17).

The combination of Port and Grow is silent on whether the received datagram is **a token generated by the virtual ring manager** and that **the manager is responsible for the topology of the ring**.

Caves discloses a topology of stations meant to send and receive packets configured in a ring. One of the stations is described as the Master Station (Caves:

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Figure 1). Caves further discloses the Master Station is **capable of generating a token** (Caves: Col. 4 lines 49-53). Caves also discloses **the manager is responsible for the topology of the ring** by generating the frame format (Caves: Col. 1, lines 54-58), building the transmission delay through the ring (Caves: Col. 1, lines 66-68), informing the other stations in the ring regarding available bandwidth (Caves: Col. 4, lines 5-8), determining the priority of the slots (Caves: Col. 5, lines 61-66), and is able to determine the topology of the ring by checking circuit slots for ownership (Caves: Col. 6, lines 62-65).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Port and Grow to include a ring manager capable of generating tokens in the ring topology, monitoring the topology and validating the topology as taught by Caves. This benefits the method by synchronizing the topology of the network when a master station is present (Caves: Col. 7, lines 59-61).

As per Claim 40, Port discloses **a method to use in a node within a network comprising a transport layer protocol providing end to end data transfer** (Port: Col. 24, lines 36-39. The invention may be embedded into a custom transport protocol layer such as TCP/IP.), **for multicasting datagrams on a virtual ring** (Col. 6, lines 23-28. In the multicasting system of the invention, messages are transmitted to a group belonging to the ring network.), **each node on the virtual ring being logically connected according to the network transport layer protocol to an upstream neighbor node and a downstream neighbor node through virtual connections** (Port: Figure 1; Col. 7, lines 38-50. Host processors 111-118 are connected to nodes

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101-108, respectively, forming a ring that sends data in a unidirectional communications path.), **comprising:**

sending a datagram to the downstream neighbor node on the virtual ring (Port:

Col. 25, lines 3-9. Each node sends messages to a downstream node and receives from an upstream node. These nodes are interconnected to form a ring.);

said virtual ring datagram comprising:

a virtual ring identifier (Port: Col. 8, lines 5-8. The packet contains a 16-bit socket identifier or SOCKET ID.);

means for identifying the node originator of the virtual ring datagram (Port: Col. 8, lines 10-12. An 8-bit source loop address identifies the node from which the packet was sent.);

and data (Port: Col. 8, lines 12-13. A TYPE field details if the packet has data.);

identifying the received datagram upon receipt of the datagram (Port: Col. 14, lines 15-26. Normal packets are sent from a first process to a second process. A node receiving a packet determines if it is the source of the packet.);

determining if the received datagram is a token generated by a virtual ring

manager responsible for validating and modifying a ring topology, comprising:

identifying the virtual ring (Col. 26, lines 8-11. An INIT TOKEN message sent through the ring network to a node after the nodes have established their upstream and downstream positions.);

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checking whether the token is valid (Col. 26, lines 19-29. Validity of the token message is verified by a node if the node determines it is the source of the token message. If this is the case, the node deletes the token.);

and forwarding the token to the downstream neighbor node on the identified virtual ring if the token is valid (Col. 26, lines 19-29. If the node is not the source, it transmits the token to the next downstream node.);

determining if the received datagram is a virtual ring datagram containing data other than a token, comprising:

identifying the virtual ring (Col. 14, lines 15-19. Normal packets are transmitted between processes of one node to another process of another node.);

and checking the node originator of the received virtual ring datagram (Col. 14, lines 23-27; Figure 5a. Step 502 of Figure 5a determines whether or not a node is the source or destination of packet.);

determining if the received virtual ring datagram has not been locally originated, comprising:

processing data comprised in said virtual ring datagram and forwarding said virtual ring datagram to the downstream neighbor node on the identified virtual ring (Col. 16, lines 19-29; Figure 5a. If the node is not the source or destination of the packet, the packet is passed through the FIFO and then output state machine, and finally back onto the network. Col. 10, lines 44-54. With regards to the pass through FIFO memory (first in first out), words of packets are stored the packet is passed back out onto the ring.);

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and determining if the received virtual ring datagram has been locally originated, comprising:

removing the virtual ring datagram from the virtual ring (Col. 16, lines 29-34. If the node determines it is the source of the packet, the packet is deleted.).

Port is able to determine if the datagram is a token or a virtual ring datagram, but is silent on **determining if the received datagram is a token generated by the virtual ring manager, wherein said manager is responsible for validating and modifying a ring topology and determining if the received datagram is a virtual ring datagram containing data other than a token.**

Grow discloses **determining if the received datagram is a token and determining if the received datagram is a virtual ring datagram.**

Grow discloses bandwidth allocation in a token controlled loop communications network, from Figure 5 and Col.14, lines 35-38, wherein the ring logic is incorporated in each unit of the ring network of Figure 1, that the frame synchronization logic determines whether the frame is a data frame or a token frame. If the received frame is a data frame, the frame is either deleted or continued through the ring architecture, depending on the source of the data frame having received or having not received the data frame (Grow; Col. 16, lines 17-29).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Port to combine the first embodiment describing the handling of normal packets and the alternate embodiment for handling token packets and to include **determining if the received datagram is a token** and

determining if the received datagram is a virtual ring datagram taught by Grow to properly determine when information may be transmitted through the loop. By sending a token through the loop, the load through the loop can be measured which ultimately determines the class of service that can be established (Grow; Col. 6, lines 11-17).

The combination of Port and Grow is silent on whether the received datagram is **a token generated by the virtual ring manager** and that **the manager is responsible for the topology of the ring**.

Caves discloses a topology of stations meant to send and receive packets configured in a ring. One of the stations is described as the Master Station (Caves: Figure 1). Caves further discloses the Master Station is **capable of generating a token** (Caves: Col. 4 lines 49-53). Caves also discloses **the manager is responsible for the topology of the ring** by generating the frame format (Caves: Col. 1, lines 54-58), building the transmission delay through the ring (Caves: Col. 1, lines 66-68), informing the other stations in the ring regarding available bandwidth (Caves: Col. 4, lines 5-8), determining the priority of the slots (Caves: Col. 5, lines 61-66), and is able to determine the topology of the ring by checking circuit slots for ownership (Caves: Col. 6, lines 62-65).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Port and Grow to include a ring manager capable of generating tokens in the ring topology, monitoring the topology and validating the topology as taught by Caves. This benefits the method by synchronizing the topology of the network when a master station is present (Caves: Col. 7, lines 59-61).

Response to Arguments

9. Applicant's arguments with respect to claims 23, 30, 31, and 38-40 have been considered but are moot in view of the new ground(s) of rejection.

Allowable Subject Matter

10. The indicated allowability of claims 25, 26, 29, and 32-37 is withdrawn in view of the newly discovered reference(s) to Denecheau.

Claims 30 and 31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BENJAMIN ELLIOTT whose telephone number is (571)270-7163. The examiner can normally be reached on Monday thru Friday, 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Aung Moe can be reached on (571)272-7314. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Aung S. Moe/
Supervisory Patent Examiner, Art Unit 2416

BENJAMIN ELLIOTT
Examiner
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